REPORT NO. 89-R-07
AFPEA PROJECT NO. 88-P-102

Robbin L. Miller

Mechanical Engineer

AUTOVON 787-3362

Commercial (513) 257-3362

QUALIFICATION TESTING OF THE COMBAT TALON II SERVO POWER SUPPLY CONTAINER

HQ AFLC/DSTZ
AIR FORCE PACKAGING EVALUATION ACTIVITY
Wright-Patterson AFB OH 45433-5999

August 1989

NOTICE

When government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related government procurement operation, the United States Government thereby incurs no responsibility whatsoever, and the fact that the government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation or conveying any rights or permission to manufacture use or sell any patented invention that may in any way be related thereto. This report is not to be used in whole or part for advertising or sales purposes.

ABSTRACT

Aeronautical Systems Division, ASD/VXAL, requested assistance from the Air Force Packaging Evaluation Activity (AFPEA) to choose an off the shelf container and qualify it for the Servo power supply (P/S) used on Combat Talon II aircraft.

The P/S prototype container ~~was tested~~ at the AFPEA, HQ AFLC/DSTZ, Wright-Patterson AFB, OH 45433-5999. The container is environmentally sealed and outfitted with a humidity indicator and pressure relief valve. The container is designed to protect one P/S during worldwide shipment, storage, and handling.

The container test plan was developed to test the fragility and environmental sealing qualification requirements. The tests were conducted in accordance with Federal Test Method Standard No. 101, and Military Standard 648.

Results of the tests conducted on the prototype container show that the container provides adequate mechanical protection, but only marginal environmental protection. Based on the projected operational environment, the system program office has elected to use the container.

PREPARED BY:

Robbin Miller

Robbin Miller
Mechanical Engineer
AF Packaging Evaluation Activity

PUBLICATION DATE:

07 AUG 1989

REVIEWED BY:

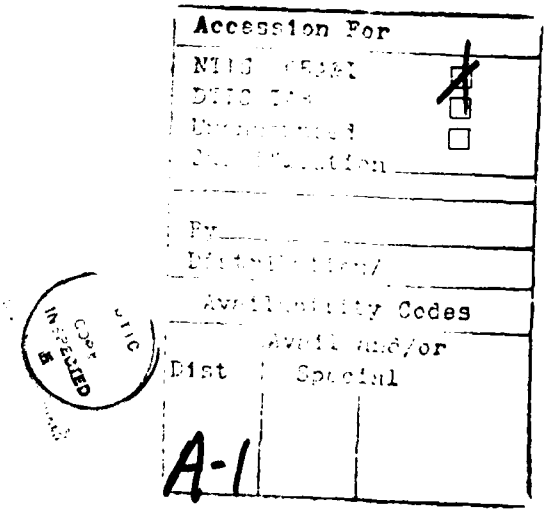
Ted Hinds

Ted Hinds
Ch, Design Branch
AFPEA

APPROVED BY:

Charlie P. Edmonson
Chief, AF Packaging
Evaluation Activity

TABLE OF CONTENTS



INTRODUCTION

BACKGROUND: Aeronautical Systems Division (ASD/VXAL), Wright-Patterson AFB OH 45433-5000 requested assistance from the Air Force Packaging Evaluation Activity (AFPEA) to choose an off the shelf container for the servo power supply (P/S) and perform qualification testing. The container chosen was a plastic multipurpose container designed by Hardigg Industries, South Deerfield, MA 01373.

PURPOSE: The purpose of this project was to determine if the container design will protect the contents, one P/S for Combat Talon II aircraft, during worldwide shipment, storage, and handling.

DESCRIPTION OF TEST CONTAINER

Two identical containers were involved in the testing. The 11214-8678-300 prototype container, now referred to as -300A or -300B were subjected to extensive testing. The sides, latches and hinges of the container were numbered counterclockwise from the forward end as shown in figure 1.

Design: The -300 prototype is a controlled-breathing container with a pressure relief valve and humidity indicator (see figure 2). The container is designed to limit the transmission of shocks to the P/S to 40 Gs. The container cover is permanently hinged on one side and ten wing latches on the remaining sides allow quick access to the container contents without the use of tools.

Construction: The container is rotationally molded from a formulation of polyethylene. Two pound density polyethylene foam encapsulates the item (see figure 3). A silicone gasket provides a seal between the container base and the container cover.

TEST OUTLINE AND TEST EQUIPMENT

Test Plan: Tests were conducted in accordance with AFPEA Test Plan 88-P-102 (see table 1). The tests used were selected to meet the qualification requirements for fragility and environmental sealing. Test methods, procedures and pass/fail criteria used were as outlined in Federal Test Method Standard No. 101 (FED-STD-101) and Military Standard 648. Any modifications to the standard procedures are noted in the test plan or the results. Each test result will specify the container used for that test, -300A or -300B.

Test Load: All tests were conducted using the P/S test load fabricated at the AFPEA. The test load weighs 92 pounds and simulates the center of gravity and the mass moment of inertia of an actual P/S.

Test Site: All testing was conducted at the AFPEA, HQ AFLC/DSTZ, Building 70, Area C, Wright-Patterson AFB OH 45433-5999. The equipment required for each test is noted in the test plan.

TEST PROCEDURES AND RESULTS

Weight Test

Test No. 1: The containers were weighed to determine weight compliance.

Results: Total tare weight of each container was 73 pounds. The results of this test are acceptable.

Leak Test

Test No. 2: The pneumatic pressure test was conducted in accordance with FED-STD-101, Method 5009.2 at 0.50 psig. The vacuum retention test was conducted in accordance with FED-STD-101, Method 5009.2 at 0.50 psig. The failure criteria for the test was 0.025 psig loss during a 30 minute period, after temperature and pressure stabilization.

Results: At the end of the 30 minute test period the pressure loss for container -300A was 0.024 psig and 0.018 psig for container -300B. At the end of the 30 minute test period the vacuum loss for containers -300A and -300B was 0.024 psig. The results of this test are acceptable.

Rough Handling Tests (+140^{o}F)

Test No. 3a: The high temperature cornerwise-drop (rotational) test was conducted in accordance with FED-STD-101, Method 5005.1. Due to the location of the center of gravity the maximum attainable height of the drop was 25 inches.

Results: Visual inspection revealed no external damage to the -300A container. A maximum of 10 Gs was obtained during the test.

Test No. 3b: The high temperature edgewise-drop (rotational) test was conducted in accordance with FED-STD-101, Method 5008.1. Due to the location of the center of gravity the maximum attainable height of the drop was 27 inches.

Results: Visual inspection revealed no external damage to the -300A container. A maximum of 12 Gs was obtained during the test.

Test No. 3c: The high temperature pendulum-impact test was conducted in accordance with FED-STD-101, Method 5012. The impact velocity was 7 ft/sec, the height of the drop was 9 inches.

Results: Visual inspection revealed no external damage to the -300A container. A maximum of 16 Gs was obtained during the test.

The container was opened after the pendulum-impact test. Visual inspection revealed no damage to the container or the test load. The results of these tests are acceptable. See appendix 1 for detailed acceleration results.

Leak Test

Test No. 4: The pneumatic pressure test was conducted in accordance with FED-STD-101, Method 5009.2. The test was performed at 0.50 psig. The failure criteria for the test was a 0.0125 psig loss during a 15 minute period after temperature and pressure stabilization.

Results: At the end of the 15 minute test period the pressure loss for container -300A was 0.0125 psig. The result of this test is acceptable.

Rough Handling Tests ($-20^{\circ}F$)

Test No. 5a: The low temperature cornerwise-drop (rotational) test was conducted in accordance with FED-STD-101, Method 5005.1. Due to the location of the center of gravity the maximum attainable height of the drop was 31 inches.

Results: Visual inspection revealed no external damage to the -300A container. A maximum of 16 Gs was obtained during the test.

Test No. 5b: The low temperature edgewise-drop (rotational) test was conducted in accordance with FED-STD-101, Method 5008.1. Due to the location of the center of gravity the maximum attainable height of the drop was 33 inches.

Results: Visual inspection revealed no external damage to the -300A container. A maximum of 22 Gs was obtained during the test.

Test No. 5c: The low temperature pendulum-impact test was conducted in accordance with FED-STD-101, Method 5012. The impact velocity was 7 ft/sec, the height of the drop was 9 inches.

Results: Visual inspection revealed no external damage to the -300A container. A maximum of 30 Gs was obtained during the test.

The container was opened after the pendulum-impact test. Visual inspection revealed no damage to the container or the test load. However after cold conditioning the decals fell off the container. The results of this test are acceptable.

Leak Test

Test No. 6: The pneumatic pressure test was conducted in accordance with FED-STD-101, Method 5009.2. The test was performed at 0.50 psig. The failure criteria for the test was a 0.0125 psig loss during a 15 minute period after temperature and pressure stabilization.

Results: At the end of the 15 minute test period the pressure loss for container -300A was 0.012 psig. The result of this test is acceptable.

Superimposed Load Test

Test No. 7: The ambient superimposed load test was conducted in accordance with FED-STD-101, Method 5016.1. A load of 2900 pounds was placed on top of the container using load spreaders. This simulates the loading of a stack of nine containers with a safety factor of two on the bottom container.

Results: Visual inspection revealed no damage to the container. The result of this test is acceptable.

Leak Test

Test No. 8: The pneumatic pressure test was conducted in accordance with FED-STD-101, Method 5009.2. The test was performed at 0.50 psig. The failure criteria for the test was a 0.0125 psig loss during a 15 minute period after temperature and pressure stabilization.

Results: The container would not pressurize and a leakage rate could not be obtained. This occurred due to the permanent deformation of hinge number one. Although the container failed the leak test after the ambient superimposed load test, the hinge deformation was a result of overall use during testing.

Anomaly: At this time container -300A was removed from the testing procedures and replaced with container -300B to finish the test plan as requested by the program office. Production containers will be equipped with latches and not hinges (see recomendations). Based on the projected operational environment, sealing ability is not a necessity.

Vibration Fatigue Test

Test No. 9: The vibration fatigue test was conducted in accordance with MIL-STD-648, paragraph 5.3.2. The container was rigidly attached to the platform (see figure 4). A sinusoidal vibration excitation was applied in a vertical direction and cyclically swept for 7.5 minutes at 2 minutes per octave to locate the resonant frequency. Input from 5 to 12.5 Hz was at 0.125 inch double amplitude and input from 12.5 to 50.0 Hz was at 1.0 G. A 30 minute dwell test was conducted at the resonant frequency.

Results: Visual inspection revealed no damage to the -300B container or the test load. A maximum of 2.7 Gs was obtained at the resonant frequency of 12.0 Hz. The maximum transmissibility obtained was 1.1. The results of this test are acceptable.

Leak Test

Test No. 10: The pneumatic pressure test was conducted in accordance with FED-STD-101, Method 5009.2. The test was performed at 0.50 psig. The failure criteria for the test was a 0.0125 psig loss during a 15 minute period after temperature and pressure stabilization.

Results: At the end of the 15 minute test period the pressure loss for container -300B was 0.006 psig. The result of this test is acceptable.

Hoisting Strength Test

Test No. 11: The single ring hoisting test was conducted in accordance with MIL-STD-648, paragraph 5.8.5. The loaded container was lifted by a lift ring and suspended for five minutes.

Results: Visual inspection of the -300B container revealed no damage or deformation. The result of this test is acceptable.

Leak Test

Test No. 12: The pneumatic pressure test was conducted in accordance with FED-STD-101, Method 5009.2. The test was performed at 0.50 psig. The failure criteria for the test was a 0.0125 psig loss during a 15 minute period after temperature and

pressure stabilization.

Results: At the end of the 15 minute test period the pressure loss for container -300B was 0.006 psig. The result of this test is acceptable.

Superimposed Load Test

Test No. 13: The high temperature, high humidity superimposed load test was conducted in accordance with FED-STD-101, Method 5016.1. A load of 1455 pounds was placed on top of the container using load spreaders this simulates the loading of a stack of nine containers with a safety factor of one on the bottom container.

Results: Visual inspection revealed a permanent deformation of the container (see figure 5). This deformation did not cause any damage to the P/S or impair stackability.

Leak Test

Test No. 14: The pneumatic pressure test was conducted in accordance with FED-STD-101, Method 5009.2. The test was performed at 3.50 psig. The failure criteria for the test was a 0.0125 psig loss during a 15 minute period after temperature and pressure stabilization.

Results: The container would not pressurize and a leakage rate could not be obtained. This occurred due to the permanent deformation of the container from the high temperature, high humidity superimposed load test.

CONCLUSION

The -300 prototype container provided adequate mechanical protection for the contents when tested in accordance with the container test plan. However, the container provides marginal environmental protection, especially if the container will be shipped and/or stored in a stacked configuration under tropical conditions.

RECOMMENDATIONS

The container should have wing latches only, no hinges. Additional cushion cut outs around the pressure relief valve and humidity indicator. Decals on the containers need better adherence for cold temperature environments. Container walls need to be made stiffer for more stability. The container should not be used for long term storage.

Table 1. Test Plan

AIR FORCE PACKAGING EVALUATION ACTIVITY

(Container Test Plan)

AFPEA PROJECT NUMBER: 88-P-102

CONTAINER SIZE (L x W x D) (INCHES) INTERIOR:	EXTERIOR:	WEIGHT (LBS) GROSS:	ITEM:	CUBE (CU. FT.)	QUANTITY	DATE
						3 Jul 89

ITEM NAME: LRUs

MANUFACTURER: Hardigg Industries

CONTAINER NAME: Part numbers 11214-8678-300

CONTAINER COST:

PACK DESCRIPTION: Composite Container

CONDITIONING: As noted below.

TEST NO.	REF STD/SPEC AND TEST METHOD OR PROCEDURE NO'S	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRUMENTATION
1.		WEIGHT TEST		
		Total container weight should not be less than 73 lbs.	Fully assembled container including shock isolation system.	Scale
2.		LEAK TEST		
	FED-STD-101 Method 5009.2	Pneumatic pressure at 0.50 PSIG and vacuum retention at 0.50 PSIG. Test duration to be a minimum of 30 minutes with 0.025 PSIG loss allowed after temperature stabilization.	Test at ambient condition from compressed air supply/vacuum pump.	Water manometer
3.		ROUGH HANDLING TESTS (HIGH TEMPERATURE +140°F)		
a.	FED-STD-101 Method 5008.1	Edgewise-drop (rotational) test. Condition at +140°F for not less than 24 hours. Drop height 36 inches or maximum height where container does not tilt over on side. Peak resultant acceleration shall not exceed 40Gs.	Test performed in chamber. One drop on two adjacent bottom edges, total of two drops.*	Tri-axial accelerometers

COMMENTS: * Remaining edge drops to be performed in Test No. 5a.

PREPARED BY: Susan Hughey
Susan Hughey, Mechanical Engineer

APPROVED BY: Ted Hinds
Ted Hinds, Chief, Design Br., AFPEA

AFALD FORM NOV 81 4

AIR FORCE PACKAGING EVALUATION ACTIVITY

(Container Test Plan)

AFPEA PROJECT NUMBER 88-P-102

CONTAINER SIZE (L x W x D)(INCHES) INTERIOR:	EXTERIOR:	WEIGHT (LBS) GROSS:	ITEM:	CUBE (CU. FT.)	QUANTITY	DATE
						3 Jul 89

ITEM NAME: LRUs

MANUFACTURER: Hardigg Industries

CONTAINER NAME: Part numbers 11214-8678-300

CONTAINER COST:

PACK DESCRIPTION: Composite Container

CONDITIONING: As noted below.

TEST NO.	REF STD/SPEC AND TEST METHOD OR PROCEDURE NO'S	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRUMENTATION
b.	FED-STD-101 Method 5005.1	Cornerwise-drop (rotational) test. Condition at +140°F for not less than 24 hours. Drop height 36 inches or maximum height where container does not tilt over on side. Peak resultant acceleration shall not exceed 40Gs.	Test performed in chamber. One drop on diagonal bottom corners, total of two drops.*	Tri-axial accelero-meters
c.	FED-STD-101 Method 5012	Pendulum-impact test. Condition at +165°F. Temperature of shock mitigation system at time of test shall be +140 (+3,-0°F). Impact velocity 7 ft/sec, drop height 9 inches. Peak resultant acceleration shall not exceed 40Gs.	One impact on two adjacent sides, total of two impacts.**	Tri-axial accelero-meters, Thermo-couples
4.	LEAK TEST FED-STD-101 Method 5009.2	Pneumatic pressure with 0.50 PSIG. Test duration not less than 15 minutes with 0.0125 PSIG loss allowed after temperature stabilization.	Ambient	Water manometer

COMMENTS: * Remaining corner drops to be performed in Test No. 5b.
** Remaining side impacts to be performed in Test No. 5c.

PREPARED BY: Susan Hughey, Mechanical Engineer

APPROVED BY: Ted Hinds, Chief, Design Br., AFPEA

AIR FORCE PACKAGING EVALUATION ACTIVITY
(Container Test Plan)

AFPEA PROJECT NUMBER: 88-P-102

CONTAINER SIZE (L x W x D)(INCHES) INTERIOR:	EXTERIOR:	WEIGHT (LBS) GROSS:	ITEM:	CUBE (CU. FT.)	QUANTITY	DATE
						3 Jul 89

ITEM NAME: LRUs

MANUFACTURER: Hardigg Industries

CONTAINER NAME: Part numbers 11214-8678-300

CONTAINER COST:

PACK DESCRIPTION: Composite Container

CONDITIONING: As noted below.

TEST NO.	REF STD/SPEC AND TEST METHOD OR PROCEDURE NO'S	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRUMENTATION
5.	ROUGH HANDLING TESTS (LOW TEMPERATURE -20°F)			
a.	FED-STD-101 Method 5008.1	Edgewise-drop (rotational) test. Condition at -20°F for not less than 24 hours. Drop height 36 inches or maximum height where container does not tilt over. Peak resultant acceleration shall not exceed 40Gs.	Test performed in chamber. One drop on two adjacent bottom edges, total of two drops.*	Tri-axial accelero-meters
b.	FED-STD-101 Method 5005.1	Cornerwise-drop (rotational) test. Condition at -20°F for not less than 24 hours. Drop height 36 inches or maximum height where container does not tilt over. Peak resultant acceleration shall not exceed 40Gs.	Test performed in chamber. One drop on diagonal bottom corners, total of two drops.**	Tri-axial accelero-meters
c.	FED-STD-101 Method 5012	Pendulum-impact test. Condition at -65°F. Temperature of shock mitigation system at time of test shall be -20 (+0,-10°F). Impact velocity 7 ft/sec, drop height 9 inches. Peak	One impact on two adjacent sides, total of two impacts.***	Tri-axial accelero-meters, Thermo-couples

COMMENTS: * These edges are opposite those impacted in Test No. 3a.
** These corners are opposite those impacted in Test No. 3b.
*** These sides are opposite those impacted in Test No. 3c.

PREPARED BY: Susan Hughey, Mechanical Engineer

APPROVED BY: Ted Hinds, Chief, Design Br., AFPEA

AIR FORCE PACKAGING EVALUATION ACTIVITY

(Container Test Plan)

AFPEA PROJECT NUMBER: 88-P-102

CONTAINER SIZE (L x W x D)(INCHES) INTERIOR:	EXTERIOR:	WEIGHT (LBS) GROSS:	ITEM:	CUBE (CU. FT.)	QUANTITY	DATE
						3 Jul 89

ITEM NAME: LRUs

MANUFACTURER: Hardigg Industries

CONTAINER NAME: Part numbers 11214-8678-300

CONTAINER COST:

PACK DESCRIPTION: Composite Container

CONDITIONING: As noted below.

TEST NO.	REF STD/SPEC AND TEST METHOD OR PROCEDURE NO'S	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRUMENTATION
		resultant acceleration shall not exceed 40Gs.		
6.	LEAK TEST FED-STD-101 Method 5009.2	Pneumatic pressure with 0.50 PSIG. Test duration not less than 15 minutes with 0.0125 PSIG loss allowed after temperature stabilization.	Ambient	Water manometer
7.	SUPERIMPOSED LOAD (Ambient temperature) FED-STD-101 Method 5016.1	At ambient temperature, stack two containers with additional load on top to simulate stacking 3 containers or 16 ft high, whichever is greater. Load equals load on bottom container times a factor of safety of 2. Test duration not less than 1 hour. Additional load placed on top container such that the total load is carried by the stacking provisions. There shall be no permanent deformation.	Stack two high, bottom container is under test.	Visual inspection

COMMENTS:

PREPARED BY: Susan Hughey, Mechanical Engineer

APPROVED BY: Ted Hinds, Chief, Design Br., AFPEA

AIR FORCE PACKAGING EVALUATION ACTIVITY

(Container Test Plan)

AFPEA PROJECT NUMBER: 88-P-102

CONTAINER SIZE (L x W x D)(INCHES) INTERIOR:	EXTERIOR:	WEIGHT (LBS) GROSS:	ITEM:	CUBE (CU. FT.)	QUANTITY	DATE
						3 Jul 89

ITEM NAME: LRUs

MANUFACTURER: Hardigg Industries

CONTAINER NAME: Part numbers 11214-8678-300

CONTAINER COST:

PACK DESCRIPTION: Composite Container

CONDITIONING: As noted below.

TEST NO.	REF STD/SPEC AND TEST METHOD OR PROCEDURE NO'S	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRUMENTATION
8.	LEAK TEST FED-STD-101 Method 5009.2	Pneumatic pressure with 0.50 PSIG. Test duration not less than 15 minutes with 0.0125 PSIG loss allowed after temperature stabilization.	Ambient	Water manometer
9.	VIBRATION FATIGUE TEST MIL-STD-648 Para 5.3.2	Input excitation of 0.125 inch double amplitude or 1G, whichever is less. Sweep approximately logarithmically from 5 to 50 Hz (about 1/2 octave/min) for 7-1/2 minutes. Then dwell 30 minutes at the resonant frequency. The test may be interrupted to prevent excessive temperature rise in materials. Transmissibility shall not exceed 5 at the resonant frequency.	Rigidly attach container to exciter. The use of straps is prohibited.	Triaxial accelerometers, Thermocouples

COMMENTS:

PREPARED BY: Susan Hughey, Mechanical Engineer

APPROVED BY: Ted Hinds, Chief, Design Br., AFPEA

AIR FORCE PACKAGING EVALUATION ACTIVITY

(Container Test Plan)

AFPEA PROJECT NUMBER: 88-P-102

CONTAINER SIZE (L x W x D)(INCHES) INTERIOR:	EXTERIOR:	WEIGHT (LBS) GROSS:	ITEM:	CUBE (CU. FT.)	QUANTITY	DATE
						3 Jul 89

ITEM NAME: LRUs

MANUFACTURER: Hardigg Industries

CONTAINER NAME: Part numbers 11214-8678-300

CONTAINER COST:

PACK DESCRIPTION: Composite Container

CONDITIONING: As noted below.

TEST NO.	REF STD/SPEC AND TEST METHOD OR PROCEDURE NO'S	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRU-MENTATION
10.	LEAK TEST FED-STD-101 Method 5009.2	Pneumatic pressure with 0.50 PSIG. Test duration not less than 15 minutes with 0.0125 PSIG loss allowed after temperature stabilization.	Ambient	Water manometer
11.	HOISTING STRENGTH TEST MIL-STD-648 Para. 5.8.5	Single ring hoisting test. Hoist container at one lift point and leave hanging for five minutes. There shall be no damage or permanent deformation.	Ambient	Visual inspection
12.	LEAK TEST FED-STD-101 Method 5009.2	Pneumatic pressure with 0.50 PSIG. Test duration not less than 15 minutes with 0.0125 PSIG loss allowed after temperature stabilization.	Ambient	Water manometer

COMMENTS:

PREPARED BY: Susan Hughey, Mechanical Engineer

APPROVED BY: Ted Hinds, Chief, Design Br., AFPEA

AIR FORCE PACKAGING EVALUATION ACTIVITY

(Container Test Plan)

AFPEA PROJECT NUMBER: 88-P-102

CONTAINER SIZE (L x W x D)(INCHES) INTERIOR:	EXTERIOR:	WEIGHT (LBS) GROSS:	ITEM:	CUBE (CU. FT.)	QUANTITY	DATE
						3 Jul 89

ITEM NAME: LRUs

MANUFACTURER: Hardigg Industries

CONTAINER NAME: Part numbers 11214-8678-300

CONTAINER COST:

PACK DESCRIPTION: Composite Container

CONDITIONING: As noted below.

TEST NO.	REF STD/SPEC AND TEST METHOD OR PROCEDURE NO'S	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRUMENTATION
13.	SUPERIMPOSED LOAD (High temperature and humidity)			
	FED-STD-101 Method 5016.1	Condition at 120°F and 90% relative humidity for 168 hours a stack of two containers with additional load on top to simulate stacking 5 containers or 16 ft high, whichever is greater. Load equals load on bottom container times a factor of safety of 1. Additional load placed on top container such that the total load is carried by the stacking provisions. There shall be no permanent deformation.	Stack two high, bottom container is under test.	Visual inspection
14.	LEAK TEST			
	FED-STD-101 Method 5009.2	Pneumatic pressure with 0.50 PSIG. Test duration not less than 15 minutes with 0.0125 PSIG loss allowed after temperature stabilization.	Ambient	Water Manometer

COMMENTS:

PREPARED BY: Susan Hughey, Mechanical Engineer

APPROVED BY: Ted Hinds, Chief, Design Br., AFPEA

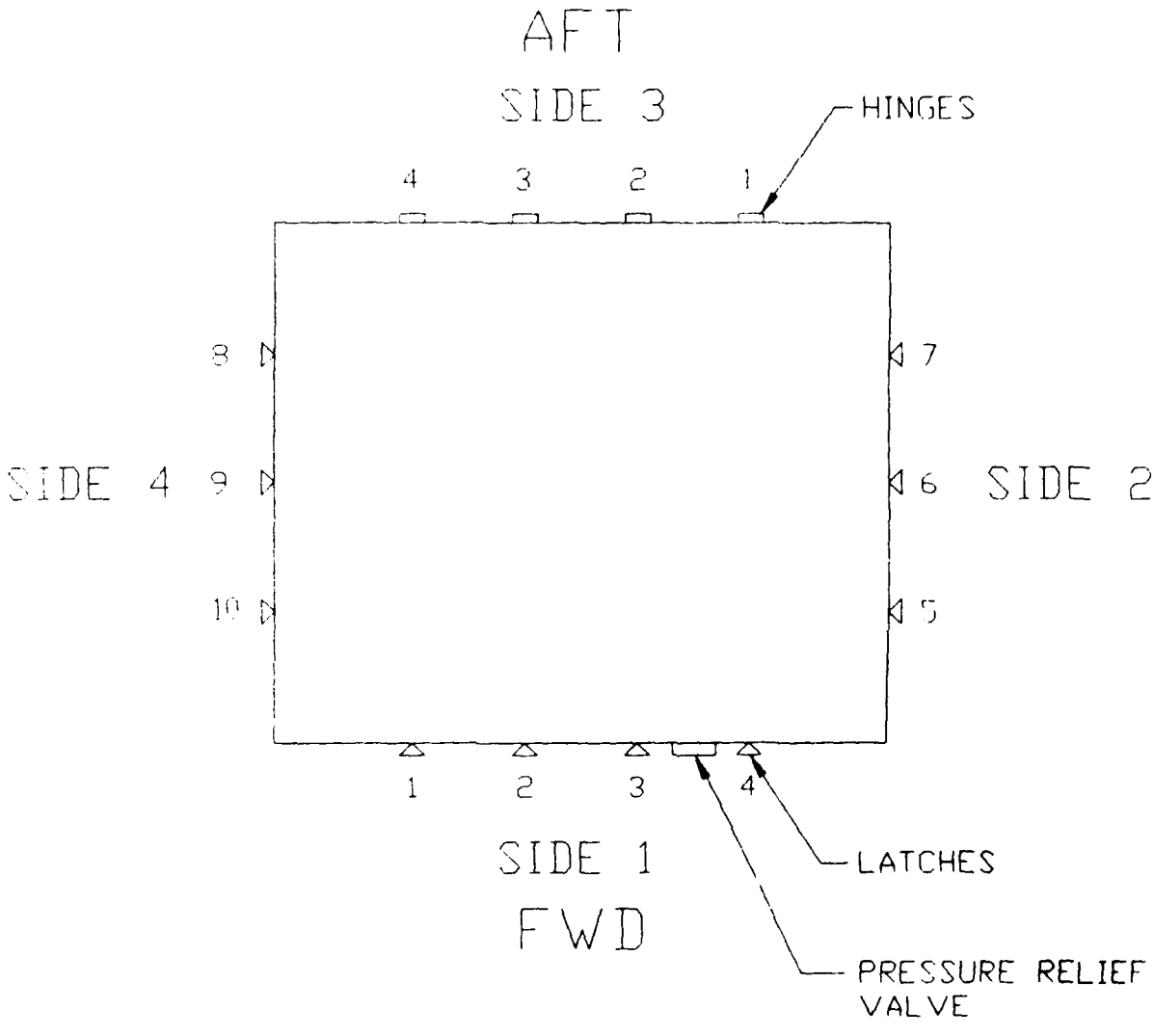


FIGURE 1. -300 Side, Latch and Hinge Numbering.

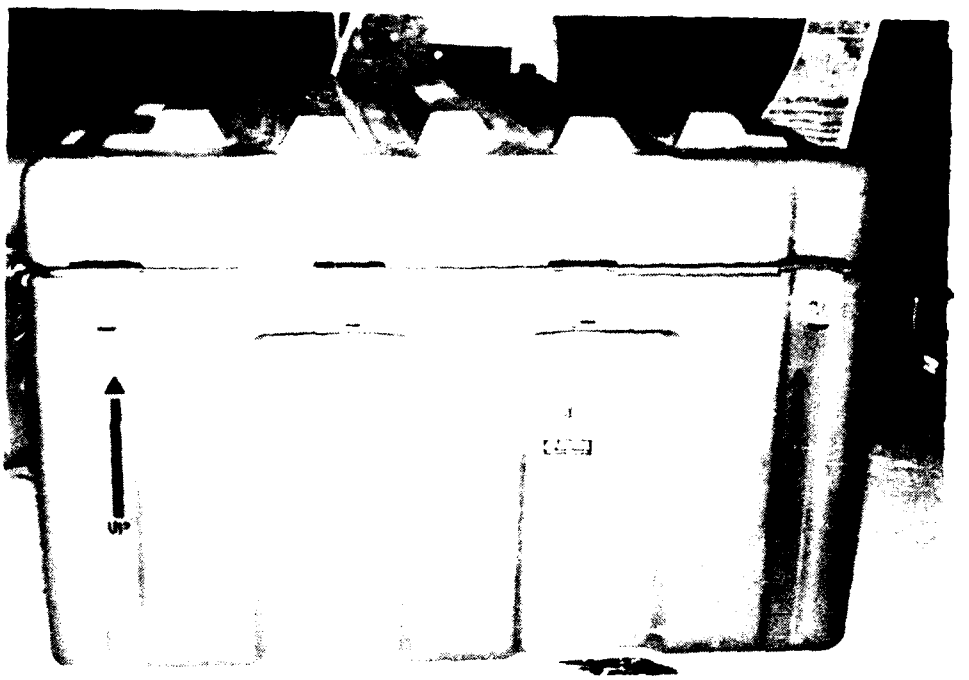


Figure 2

-300
Prototype
Container.

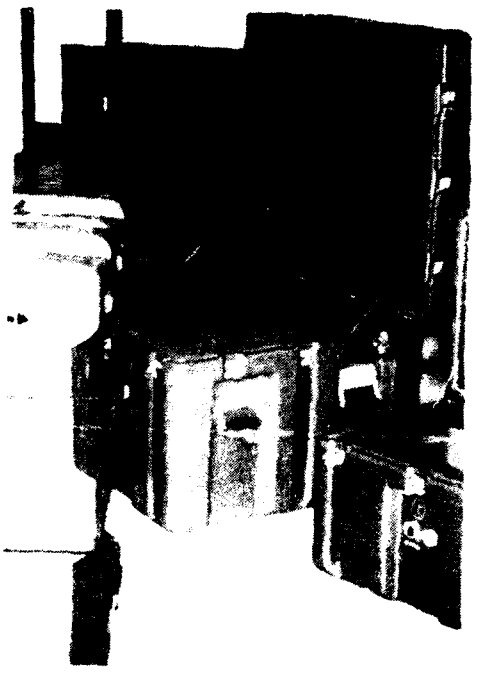


Figure 3

-300
Container
Cushioning.

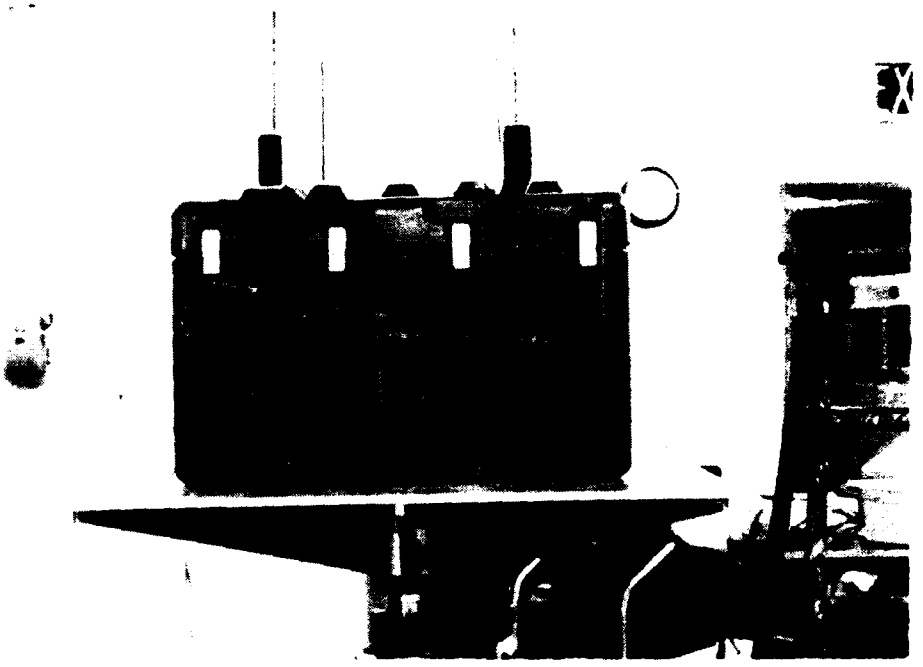


Figure 4

Vibration
Fatigue Test.

Figure 5

-300
Container
Deformation.

DISTRIBUTION LIST

DTIC/FDAC Cameron Station Alexandria, VA 22304-6145	2
HQ AFLC/DSTZ Library Wright-Patterson AFB OH 45433-5999	10
HQ USAF/LETT Washington DC 20330	1
HQ AFSC/LGT Andrews AFB DC 20334-5000	1
OC-ALC/DSTP Tinker AFB OK 73145	1
OO-ALC/DSTP Hill AFB UT 84406	1
SA-ALC/DSTP Kelly AFB TX 78241	1
SM-ALC/DSTP McClellan AFB CA 95652	1
WR-ALC/DSTP Robins AFB GA 31098	1
ASD/ALXP/SDM Wright-Patterson AFB OH 45433	1
AFLC LOC/TL/AMS/AMP Wright-Patterson AFB OH 45433	3
AF ALC/OA Wright-Patterson AFB OH 45433	2
HQ TAC/LGWL Langley AFB VA 23665-5001	2
GSA, Office of Engineering Mgt Packaging Division Washington DC 20406	1
AFSC MSD/YBAC Eglin AFB FL 32542	1

DISTRIBUTION LIST (Cont'd)

Commander 1
Naval Supply Systems Command
Attn: N. Karl (SUP 0611F)
Washington DC 20376-5000

Commander 1
Naval Air Systems Command
Attn: E. Panigot (AIR 41212A)
Washington DC 20361

Commander 1
Space and Naval Warfare Systems Command
Attn: T. Corbe (Code 8218)
Washington DC 20360

Commander 1
Naval Facilities Engineering Command
Hoffman Bldg. #2, Room 12S21
Attn: C. Manwarring (FAC 0644)
Alexandria, VA 22332

Commanding Officer 1
Naval Construction Battalion Center
Attn: K. Pollock (Code 15611K)
Port Hueneme, CA 93043

Commander 1
Naval Sea Systems Command
Attn: F. Basford (SEA 05M3)
Washington DC 20362

Commanding Officer 1
Naval Aviation Supply Office
700 Robbins Avenue
Attn: H. FURLONG
Philadelphia, PA 19111-5098

Commanding Officer 1
Navy Ships Parts Control Center
P.O. Box 2020
Attn: F. Sechrist (Code 0541)
Mechanicsburg, PA 17055-0788

Commanding Officer 1
Naval Air Engineering Center
Attn: F. Magnifico (SESD Code 9321)
Lakehurst, NJ 08733-5100

DISTRIBUTION LIST (Cont'd)

Commanding Officer Naval Weapons Station, Earle ATTN: NWHC 80A (Mel Gray) NWHC/Code 8023 Colts Neck,NJ 07722-5000	1
Commander USAMCPSCC Attn: SDSTO-TM Tobyhanna, PA 18466-5097	1
DLSIE/AMXMC-D US Army Logistics Mgt Ctr Ft Lee VA 23801-6034	1
Commander US Army Armament Munitions & Chemical Command, Attn: SMCAR-AEP (Mike Ivanroe) Bldg 455 Picatinny, NJ 07801-5000	1
HQ DLA/OWP Cameron Station Alexandria, VA 22304-6100	1
ASD/VXAL Wright-Patterson AFB OH 45433	2
ASD/VXA Wright-Patterson AFB OH 45433	1

-300 CONTAINER - DETAILED ACCELERATION RESULTS

HIGH TEMPERATURE ROUGH HANDLING TESTS (+140°F)

Impact	Position	Accelerometer readings (Gs) Resultant
26" rotational drop	Corner 1-2	8
25" rotational drop	Corner 3-4	10
27" rotational drop	Side 1	12
32" rotational drop	Side 2	10
7 ft/sec pendulum-impact	Side 1	14
7 ft/sec pendulum-impact	Side 4	16

1. No damage to the container or the test load.

LOW TEMPERATURE ROUGH HANDLING TESTS (-20°F)

Impact	Position	Accelerometer readings (Gs) Resultant
36" rotational drop	Corner 1-4	16
31" rotational drop	Corner 2-3	16
25" rotational drop	Side 3	20
33" rotational drop	Side 4	22
7 ft/sec pendulum-impact	Side 2	30
7 ft/sec pendulum-impact	Side 3	29

1. No damage to the container or the test load.

VIBRATION FATIGUE TEST

Natural frequency 12.0 Hz
(input: 1.04 G peak, 0.125 inch double amplitude)

	Resultant
Maximum Acceleration (Gs, peak to peak)	2.7
Maximum Transmissibility	1.1

1. No damage to the container or the test load.